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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/658,936	09/09/2003	Richard M. Fastow	AMD-H0561	3102
71326 7590 10/17/2007 SPANSION LLC C/O MURABITO, HAO & BARNES LLP TWO NORTH MARKET STREET THRID FLOOR SAN JOSE, CA 95113			EXAMINER NGUYEN, DAO H	
			ART UNIT 2818	PAPER NUMBER
			MAIL DATE 10/17/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/658,936

Applicant(s)

FASTOW ET AL.

Examiner

Dao H. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04/13/2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,8,10,12,21-23 and 25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10 and 12 is/are allowed.
- 6) ☒ Claim(s) 1,8,21-23 and 25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office Action is in response to the communications dated 04/13/2007.
Claims 1, 8, 10, 12, 21-23 and 25 are active in this application.
Claim(s) 2-7, 9, 11, 13-20 and 24 have been cancelled.

Remarks

2. Applicant's argument(s), filed 04/13/2007, with respect to the teaching of Weimer et al. (US 6,348,380) have been fully considered, but are not persuasive.

It is asserted that when dilute steam ambient oxidation is applied to the structure described by Weimer, a silicon oxide layer is formed by thermal oxidation at the interface between polysilicon floating gate 250 and ONO layer 260 (which Applicants named "third layer", see Applicants' remarks pages 6, 7); another silicon oxide layer is also formed by thermal oxidation at the interface between the ONO layer 260 and the polysilicon control gate 270 ("fourth layer").

However, because the ONO (Oxide-Nitride-Oxide) layer 260 comprises oxide layers on its lower and upper surfaces (which are also formed by thermal oxidations; see Weimer's col. 4, lines 58-65; col. 5, lines 5-22), additional formation(s) by thermal oxidation(s) of the third layer of oxide layer at the lower surface of the ONO layer 260 (that is, at the interface between polysilicon floating gate 250 and ONO layer 260) and of the fourth layer of oxide layer at the upper surface of the ONO layer 260 (that is, at

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the interface between the ONO layer 260 and the polysilicon control gate 270) would only result in thicker oxide layers at the upper and lower surfaces of the ONO layer, and the final product is still comprising an ONO layer sandwiched between and adjoined both the floating gate 250 and the control gate 270.

Clearly, Weimer does disclose the claimed limitations of claim 21 and all of its dependent claims.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. **Claim(s) 21-23 and 25 are rejected under 35 U. S. C. § 102 (e) as being anticipated by U.S. Patent No. 6,348,380 to Weimer et al.**

Regarding claim 21, Weimer discloses a flash memory cell, as shown in figs. 9-10, comprising:

a substrate 220 comprising a source and a drain (col. 12, lines 31-33);

a first layer comprising a first silicon material (silicon oxide layer formed by thermal oxidation at the interface between Ta₂O₅ layer 230 and silicon substrate 220: oxide-silicon interface; col. 10, lines 1-22) and adjoining said substrate 220;

a dielectric layer 230 adjoining said first layer, said dielectric layer 230 comprising a dielectric material having a dielectric constant greater than that of silicon dioxide, wherein said dielectric material comprises a metal oxide (Ta₂O₅; col. 6, lines 24-33);

a second layer comprising a second silicon material (silicon oxide layer formed by thermal oxidation at the interface between Ta₂O₅ layer 230 and silicon floating gate 250: oxide-silicon interface; col. 10, lines 1-22) and adjoining said dielectric layer 230;

a polysilicon floating gate 250 adjoining said second layer;

an oxide-nitride-oxide (ONO) layer 260 adjoining said floating gate 250; and

a control gate 270 adjoining said ONO layer 260, wherein said substrate 220, said first layer, said dielectric layer 230, said second layer, said floating gate 250, said ONO layer 260 and said control gate 270 are arranged in a laminate structure, wherein said first layer is sandwiched between said substrate 220 and said dielectric layer 230, wherein said dielectric layer 230 is sandwiched between said first layer and said second layer, wherein said second layer is sandwiched between said dielectric layer 230 and said floating gate 250, and wherein said ONO layer 260 is sandwiched between said floating gate 250 and said control gate 270.

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Regarding claim 22, Weimer discloses the flash memory cell wherein said first silicon material is selected from the group consisting of silicon dioxide, silicon oxynitride and silicon oxynitrate. See col. 10, lines 1-22.

Regarding claim 23, Weimer discloses the flash memory cell wherein said second silicon material is selected from the group consisting of silicon dioxide, silicon oxynitride and silicon oxynitrate. See col. 10, lines 1-22.

Regarding claim 25, Weimer discloses the flash memory cell wherein said dielectric layer 230 comprises a composite of said a metal oxide (Ta_2O_5) and a material selected from the group consisting of silicon dioxide, silicon oxynitride and silicon oxynitrate. See 6, lines 24-39.

5. Claim(s) 1, 8 are rejected under 35 U. S. C. § 102 (e) as being anticipated by U.S. Patent No. 6,617,639 to Wang et al.

The applied reference has a common Assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

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Regarding claim 1, Wang discloses a flash memory cell, as shown in fig. 10, comprising:

- a substrate 16 comprising a source and a drain 12/14;
- a silicon dioxide layer 54 adjoining said substrate 16;
- a dielectric layer 24 adjoining said silicon dioxide layer 54, said dielectric layer 24 comprising a dielectric material having a dielectric constant greater than that of silicon dioxide, wherein said dielectric material comprises a metal oxide (see col. 8, lines 34-64; col. 12, lines 6-34);
- a polysilicon floating gate 26 adjoining said dielectric layer 24;
- an oxide-nitride-oxide (ONO) layer 30 adjoining said floating gate 26; and
- a control gate 28 adjoining said ONO layer 30, wherein said substrate 16, said silicon dioxide layer 54, said dielectric layer 24, said floating gate 26, said ONO layer 30 and said control gate 28 are arranged in a laminate structure, wherein said silicon dioxide layer 54 is sandwiched between said substrate 16 and said dielectric layer 24, wherein said dielectric layer 24 is sandwiched between said silicon dioxide layer 54 and said floating gate 26, and wherein said ONO layer 30 is sandwiched between said floating gate 26 and said control gate 28.

Regarding claim 8, Wang discloses the flash memory cell wherein said dielectric layer 24 comprises a composite of said metal oxide and a material selected from the group consisting of silicon dioxide, silicon oxynitride and silicon oxynitrate. See col. 8, lines 34-64; col. 12, lines 6-34.

Allowance

Claims 10 and 12 are allowed.

Conclusion

6. A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the day of this letter. Failure to respond within the period for response will cause the application to become abandoned (see M.P.E.P 710.02(b)).

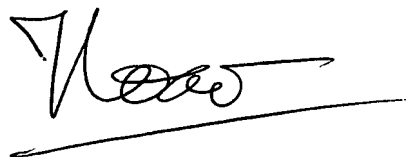
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dao H. Nguyen whose telephone number is (571)272-1791. The examiner can normally be reached on Monday-Friday, 9:00 AM – 6:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Loke, can be reached on (571)272-1657. The fax numbers for all communication(s) is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571)272-1625.

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A handwritten signature in black ink, appearing to read 'Dao H. Nguyen', with a long horizontal line extending from the end of the signature.

Dao H. Nguyen

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October 15, 2007